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RECORD OF ORAL HEARING
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PAUL E. DENNEY, JAY R. EASTMAN, and
PAUL M. FALLARA

Appeal 2009-006007
Application 10/690,833
Technology Center 3700

Oral Hearing Held: June 17, 2010

Before, LINDA E. HORNER, JENNIFER D. BAHR, and KEN B. BARRETT
Administrative Patent Judges

ON BEHALF OF THE APPELLANT:

BRUCE S. ITCHKAWITZ, Ph.D., Esq.
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1 JUDGE HORNER: Okay. So we'll begin with 2009-006007, and we've had
2 an opportunity to review your case. You've got 20 minutes and you can
3 proceed when you're ready.

4 DR. ITCHKAWITZ: All right. I have a one-page sheet with
5 some figures if I could copy for each of you.

6 JUDGE HORNER: Are they figures from the record?

7 DR. ITCHKAWITZ: Yes.

8 JUDGE HORNER: That's fine.

9 DR. ITCHKAWITZ: So I know you had a chance to review the
10 case. The Invention for this Application is a laser head for a concrete drilling
11 system designed to be used in inhabited buildings, such as hospitals, where
12 the use of conventional drilling systems would disturb the patients. Patients
13 are also sensitive to disruptions, as you can imagine, of conventional drilling.
14 But moving the patients out of the hospital to do the work is impractical. So
15 this invention is intended to be used in seismic retrofitting in such a situation
16 where reducing the disruptive effects of noise, fumes, vibrations and dust can
17 be avoided.

18 So the system achieves this result in part due to the containment
19 plenum, which is part connected to the laser head, and it confines and
20 removes the irradiated material from the area where the laser is working. In
21 particular, as recited by Claim 1, the containment plenum is cooled by a
22 cooling medium flowing through a coolant conduit. Now, there are four
23 pieces of prior art that are cited together in an obviousness rejection of Claim
24 1, but it's our assertion that Claim 1 has elements which are missing from all
25 of these references, in particular having a containment plenum as recited by

1 Claim 1 where it's cooled by a cooling medium flowing through the coolant
2 conduit. The cited references either don't disclose any cooling, or when they
3 do disclose cooling it's cooling of other elements of the optical system. They
4 are elements which actually interact with the laser beam.

5 The Uraki reference which is shown on this sheet I handed you,
6 the lower left is a representative figure from Uraki, that doesn't disclose any
7 cooling. Otsubo, the second from the left, also doesn't describe any cooling.
8 The third reference, Freiwald, which is shown in the third figure, it discloses
9 cooling of a bladed material from material that's removed from the surface of
10 the concrete by using ambient air, sucking air in through the bottom of the
11 device and using that to cool this hot, bladed material, material that was
12 irradiated by the laser. Freiwald also does disclosing using water or air
13 cooling of optical elements that are far upstream from the containment
14 plenum elements, such as lenses.

15 And then, lastly, the DiCurcio reference, which is the fourth one,
16 shows cooling, but of the optical cavity where the laser light's created. It
17 doesn't disclose cooling something like a containment plenum, which doesn't
18 interact with the laser beam.

19 JUDGE BARRETT: The first reference, Uraki, you said that
20 doesn't disclose cooling, but isn't the device immersed in water? Wouldn't the
21 water serve as a coolant?

22 DR. ITCHKAWITZ: Uraki is silent about what the temperature
23 is or whether there's cooling occurring or not. It is true that the Examiner
24 cited an inherency argument to say that there must be some cooling. Well,
25 first, that's not cooling through a cooling conduit, as is in Claim 1.

1 JUDGE BAHR: Since you brought that up, what is a cooling
2 conduit, in other words, a cooling conduit of the plenum? Would just a fluid
3 passing through the plenum itself be a conduit of the containment plenum or
4 does there need to be some other conduit within the plenum, a tube or
5 something? Or are we talking about a conduit that leads into the plenum?

6 DR. ITCHKAWITZ: Well, the claim recites, gives further
7 limitations of what this coolant conduit is. It's something that's fluidly
8 coupled to its source of the cooling medium that is spaced from the
9 containment plenum.

10 JUDGE BAHR: What about water or air coming in and flowing
11 through the plenum, if the walls of the plenum are the conduit?

12 DR. ITCHKAWITZ: That conceivably could be a conduit where
13 it's bringing this medium from some distant place and going through in order
14 to cool the containment plenum.

15 JUDGE HORNER: Is the capture chamber 26 of the Freiwald
16 reference a containment plenum?

17 DR. ITCHKAWITZ: I would say not. It's not containing the
18 irradiated material as is recited in our application. But even if it is determined
19 to be a containment plenum, it's not cooling by using a coolant conduit. In
20 fact, if we call element 26 a plenum, it's not disclosed to be cooled at all. All
21 that Freiwald discloses is that the bladed material is cooled.

22 JUDGE HORNER: So there's an air stream flowing through that
23 chamber?.

24 DR. ITCHKAWITZ: Yes.

25 JUDGE HORNER: But your position is we don't know whether

1 that's cooling that chamber?

2 DR. ITCHKAWITZ: That's correct.

3 JUDGE HORNER: Okay.

4 JUDGE BARRETT: Even if it wasn't explicitly disclosing that
5 it's cooling the plenum, wouldn't one of ordinary skill in the art find it obvious
6 that that air flowing through there could be used to cool the plenum?

7 DR. ITCHKAWITZ: It could or could not. The reference is
8 silent on that and if you're relying on inherency that it must necessarily be
9 cooling, that's not true. The temperature of the gas going through there could
10 well be insufficient to cool that plenum or that element 26. And even if you
11 were going to rely on the disclosure of Freiwald for the containment plenum
12 that is cooled by a coolant conduit, we'd assert that you can't use Freiwald in
13 conjunction with the Uraki reference.

14 Freiwald discloses the way it cools the bladed material is by
15 using ambient air. It says "such ambient air is required in order to provide the
16 coolant." Well, as was mentioned previously, Uraki is under water. There is
17 no ambient air. You can't combine Freiwald with Uraki to get the claimed
18 invention.

19 JUDGE BAHR: There is injected shield gas, right? Before the
20 laser machining starts they actually evacuate the water from that front
21 chamber 2, I think it is, and they've got shield gas in there.

22 DR. ITCHKAWITZ: That's right. They disclose forcing water
23 out, you know, using pressurized gas. They disclose that it's an inert gas or
24 it's a dry gas; and, even if some -- let's see if I can put my finger on where
25 they actually said it. In Uraki at column 8, lines 27 through 29, they disclose

1 that this dry gas is heated; so it's not cooling. And despite the Examiner's
2 citation of that it would inherently cool, that's just not true. Iraqi discloses
3 that it's a heated gas.

4 JUDGE BARRETT: But isn't it all relative? You're talking a
5 laser which presumably is very high temperatures. Even a heated gas may
6 still be cooler than that and serve to cool the overall device.

7 DR. ITCHKAWITZ: Well, for the gas to cool the plenum, it has
8 to be colder than the plenum. We're not given any information in Uraki about
9 the temperature of this gas except for the fact that it's heated. And so to try to
10 make some inference about there must necessarily be cooling, this can't be
11 done. It's not inherent in the system. And, if there are no other questions, I
12 don't see any reason that we continue talking about this particular case.

13 JUDGE HORNER: Okay.

14 Whereupon, at 10:12 a.m., the proceedings were concluded.
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